

NEW HOPE SUBDIVISION (PWS 2180023) SOURCE WATER ASSESSMENT FINAL REPORT

January 21, 2003



State of Idaho Department of Environmental Quality

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *Source Water Assessment for New Hope Subdivision, Orofino, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The New Hope Subdivision drinking water system consists of two ground water wells. The wells are situated approximately five miles west of Orofino and one mile north of the Clearwater River on the Nez Perce Indian Reservation. Well # 6, drilled recently in February of 2002 is located about 200 to 300 feet north of Well #5. The New Hope Subdivision drinking water system currently serves 65 people through 33 connections.

Final susceptibility scores are derived from equally weighing system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential Contaminants/Land Uses are divided into four categories, inorganic contaminants (IOCs, i.e. nitrates, arsenic), volatile organic contaminants (VOCs, i.e. petroleum products), synthetic organic contaminants (SOCs, i.e. pesticides), and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

In terms of total susceptibility, Well #5 of the New Hope Subdivision rates moderate for IOCs, low for VOCs and SOCs, and automatically high for microbial contaminants. Well #6 rates moderate for IOCs, VOCs, SOCs, and microbial contaminants. Total coliform bacteria were detected repeatedly at Well #5 in September 1994, resulting in an automatic high susceptibility score for microbial contaminants. Hydrologic sensitivity is rated low for both wells and system construction was moderate for Well #5 and high for Well #6 (due to lack of information from a sanitary survey). Land use for both wells is predominantly agricultural land in the 6-year and 10-year time of travel (TOT) zones, contributing to the overall susceptibility of the system.

No VOCs or SOCs have ever been detected in the wells. Trace concentrations of the IOCs barium, fluoride, nitrate, and sodium have been detected in tested water, but at concentrations significantly below maximum contamination levels (MCLs) as set by the EPA. Alpha and beta particles and radium (radionuclides) have also been detected in the wells and the distribution system at levels below the MCLs. Total coliform bacteria have been detected repeatedly in the distribution system in August and September 1994 and again in August 2001 and in Well #5 in September 1994. However, no further coliform bacteria detections have occurred.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the New Hope Subdivision, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system’s components and its capacity). Actions should be taken to keep a 50-foot radius perimeter clear of all potential contaminants from around the wellheads. Any contaminant spills within the delineation should be carefully monitored and dealt with. As much of the designated protection areas are outside the direct jurisdiction of the New Hope Subdivision drinking water system, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. Providing state and local agencies with a recent sanitary survey that includes Well #6 may reduce the overall susceptibility of the system and will assist the DEQ and local agencies in determining the drinking water protection needs of the New Hope Subdivision. In addition, the wells should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus on any drinking water protection plan as the delineation contains some urban and residential land uses. Public education topics could include proper lawn care practices, household hazardous waste disposal methods, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are transportation corridors through the delineation, the Idaho Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Clearwater Soil and Water Conservation District, and the Natural Resource Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR NEW HOPE SUBDIVISION, OROFINO, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the rankings of this assessment mean.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the EPA to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The local community, based on its own needs and limitations, should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The New Hope Subdivision drinking water system consists of two ground water wells. The wells are situated approximately five miles west of Orofino and one mile north of the Clearwater River on the Nez Perce Indian Reservation. Well # 6, drilled recently in February of 2002 is located about 200 to 300 feet north of Well #5. The New Hope Subdivision drinking water system currently serves 65 people through 33 connections (Figure 1).

In terms of total susceptibility, Well #5 of the New Hope Subdivision rates moderate for IOCs, low for VOCs and SOCs, and automatically high for microbial contaminants. Well #6 rates moderate for IOCs, VOCs, SOCs, and microbial contaminants. Total coliform bacteria was detected repeatedly at Well #5 in September 1994, resulting in an automatic high susceptibility score for microbial contaminants. Hydrologic sensitivity is rated low for both wells and system construction was moderate for Well #5 and high for Well #6 (due to lack of information from a sanitary survey). Land use for both wells is predominantly agricultural land in the 6-year and 10-year TOT zones, contributing to the overall susceptibility of the system.

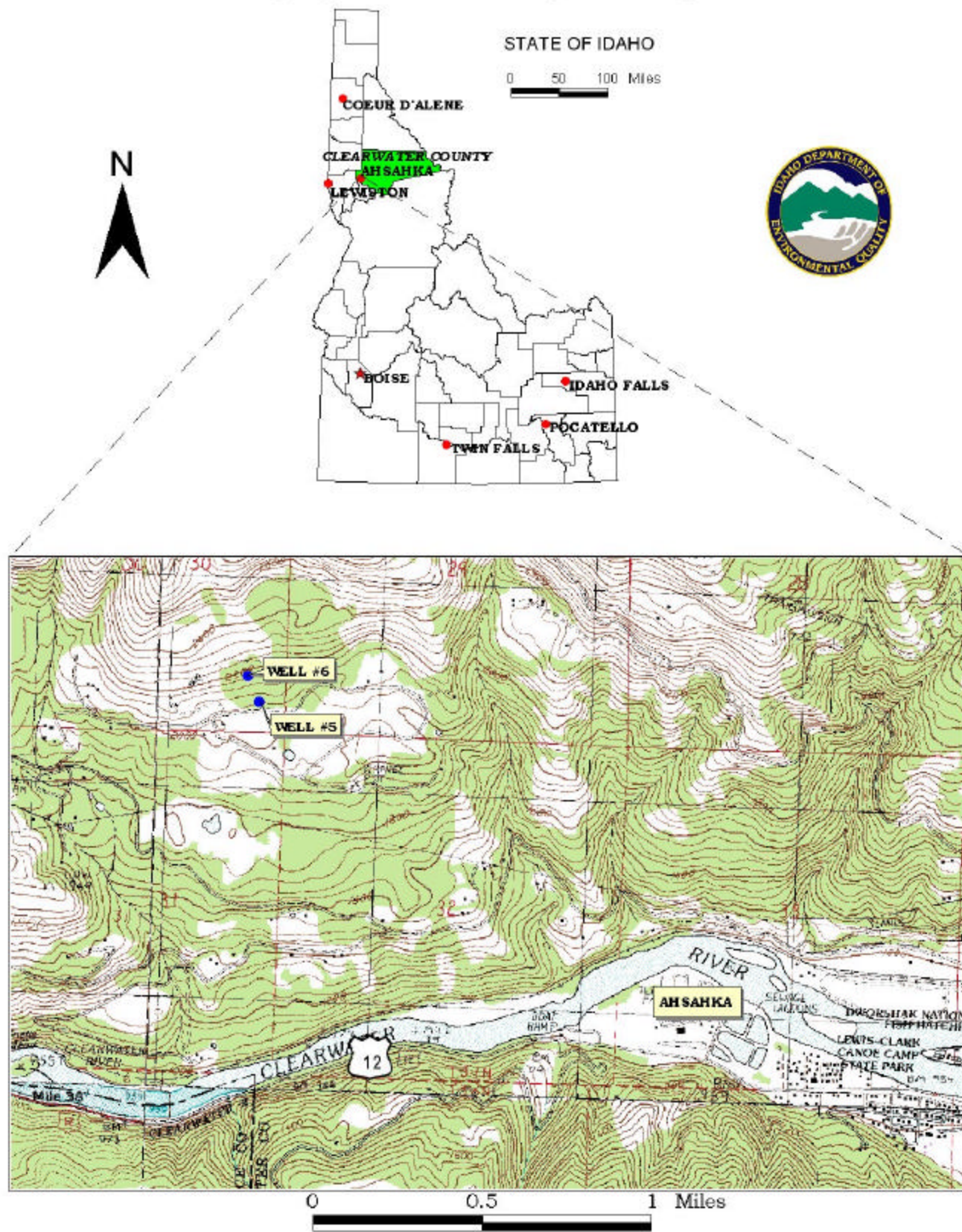
No VOCs or SOCs have ever been detected in the wells. Trace concentrations of the IOCs barium, fluoride, nitrate, and sodium have been detected in tested water, but at concentrations significantly below MCLs as set by the EPA. Alpha and beta particles and radium (radionuclides) have also been detected in the wells and the distribution system at levels below the MCLs. Total coliform bacteria have been detected repeatedly in the distribution system in August and September 1994 and again in August 2001 and in Well #5 in August 1994. However, no further coliform bacteria detections have occurred.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into TOT zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with the University of Idaho to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water in the vicinity of the New Hope Subdivision wells. The computer model used site specific data, assimilated by the University of Idaho from a variety of sources including operator input, local area well logs, and hydrogeologic reports (detailed below).

The conceptual hydrogeologic model for the New Hope Subdivision source wells, Wells 2 (now inactive) and 5, is based on interpretation of available well logs and published geologic maps. New Hope Subdivision is located a few thousand meters northwest of Ahsahka, ID. The source well logs indicate water is derived from granite of the Idaho Batholith. Rock described as “granite” on the source well log is probably another type of crystalline rock such as quartz-diorite, gabbro or gneiss, based upon the geologic map and experience. Reference to all non-basalt rock in the area as “granite” is a commonly made error among drillers and road-builders in this region. The geology is based on the Pullman quadrangle geologic map at a scale of 1:250,000 (Rember and Bennett, 1979).

FIGURE 1. Geographic Location of New Hope Subdivision



The ground elevation is about 2020 feet above mean sea level (MSL). Nearby elevations range from approximately 980 ft to 3000 ft above MSL. Discharge from Well #5 is 22 gallons per minute (gpm) and discharge from Well #6 is 27 gpm. Little information is known about the hydrogeology of the area.

Ground water occurrence in crystalline rock aquifers is influenced by weathering at shallow depths and fracturing at deeper depths (Kaal, 1978). Typically, ground water occurs under perched and water table conditions in surficial sediments and weathered bedrock, whereas weathered and fractured granite at deeper depths may contain ground water under confined conditions (Kaal, 1978). In unconfined aquifers, water flow follows topography and is generally less than 10 feet below ground.

The Clearwater River flows over crystalline rock of the Idaho Batholith and Pre-Cambrian Belt Supergroup. Imnaha Basalt of the Columbia River Basalt Group contacts the crystalline rock approximately 300 m north of the river. Water from the source wells is derived from the crystalline rock aquifer, though it is probably in gneiss basement rock or the Belt Supergroup; the geologic map is at too small a scale to know with any certainty (Rember and Bennett, 1979). Ground water elevations are slightly higher than the river elevation.

There are no mapped structural features in the vicinity of the sources.

The headwaters of the Clearwater River are approximately seven miles east of Syringa, ID at the confluence of the Lochsa and Selway Rivers. The river discharges into the Snake River at Lewiston. Most of the water in the river during baseflow conditions is from ground water and water released from Dworshak reservoir. Snowmelt runoff during the spring months also contributes to the river. Near Kamiah, the Clearwater River separates two generalized hydrologic provinces, the Clearwater Plateau to the west and the Clearwater Uplands to the east. The river is believed to gain water from the crystalline rock.

The headwaters of the North Fork of the Clearwater River are in the Clearwater National Forest, due north of Ahsahka. The North Fork discharges into the Clearwater River at Ahsahka. It is believed to gain water from the aquifer at the area of study.

No aquifer recharge data are available for the New Hope Subdivision area. In a study by Wyatt-Jaykim (1994) recharge to the central basin (Lewiston basin) was modeled as 1 in/yr; 2 in/yr was selected in the higher areas. Because the New Hope area lies at a higher elevation, precipitation rates are probably somewhat greater. Recharge is therefore expected to be greater.

The amount of areal recharge used in the model for the source well is 2 in/yr. This is a low value for higher elevations. Elevations in the vicinity of the wells are approximately 2100 feet above MSL with topography climbing to 3000 feet above MSL compared to Lewiston at approximately 700 feet above MSL.

The WhAEM model is used to delineate the capture zones. Nearby wells were used for test points in the WhAEM simulations. Information on test points was obtained from a search of the Idaho Department of Water Resources database available on the internet. The locations of the test points are limited to information supplied on well logs, typically the quarter-quarter section (0.25 mile²). Therefore, the accuracy of the test point elevation and the static water elevation is dependent upon the accuracy of the driller's log and the topographic relief in the quarter-quarter section.

The capture zones delineated herein are based on limited data and must be taken as best estimates. If more data become available in the future these delineations should be adjusted based on additional modeling incorporating the new data. The WhAEM model is used to delineate the capture zones.

Because the wells of the New Hope Subdivision are located within 200 to 300 feet of each other, they share the same delineation. That delineated area can best be described as a northern trending corridor that extends from the wells toward Teakean and Louse Creek to the north (Figure 2). The actual data used by the University of Idaho in determining the source water assessment delineation area is available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

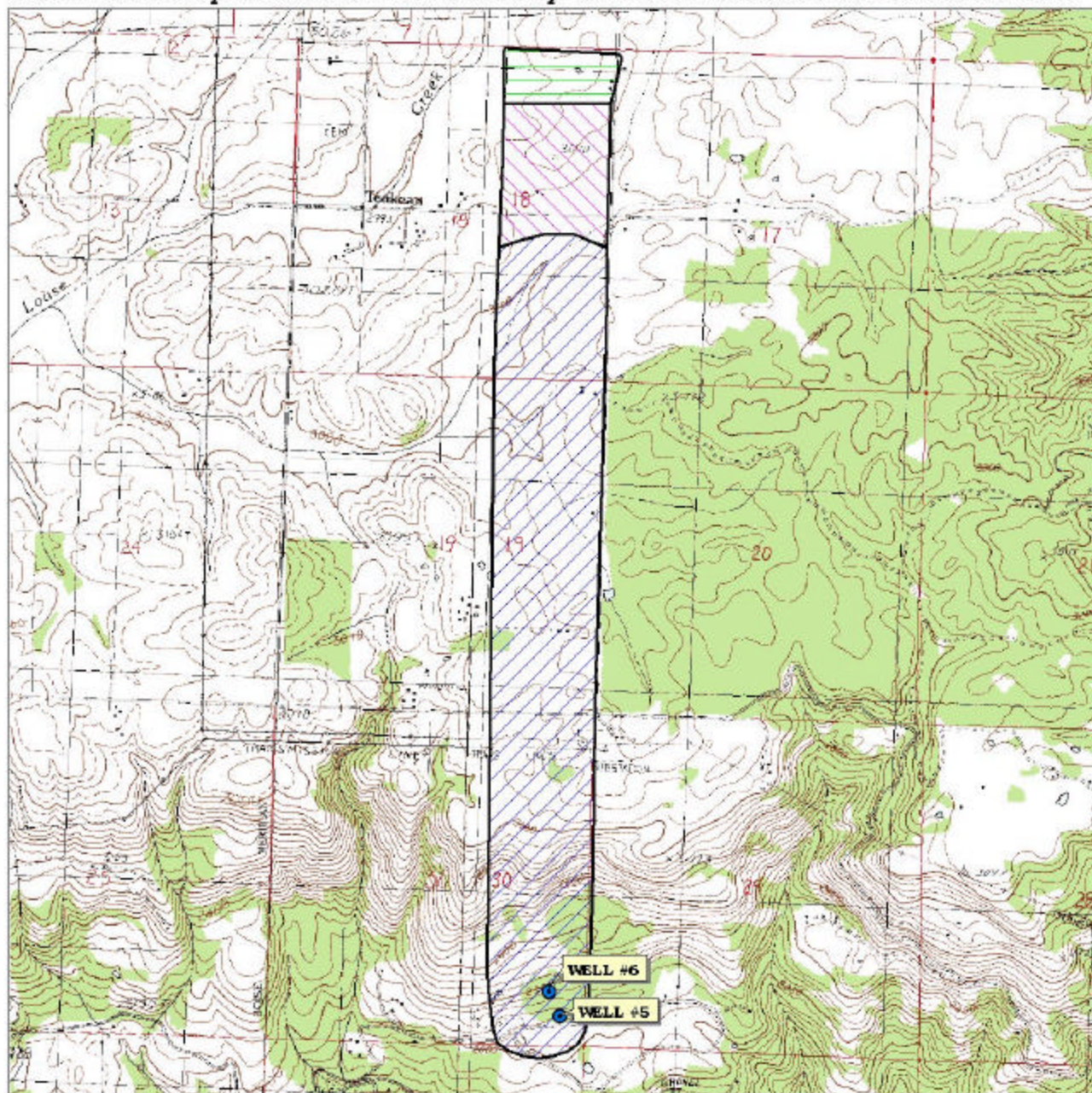
Land use within the immediate area of the New Hope Subdivision wells is unincorporated or residential land while the surrounding area is a mixture of agricultural land.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in November and December 2002. The first phase involved identifying and documenting potential contaminant sources within the New Hope Subdivision source water assessment area (Figure 2) through the use of field surveys, computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

FIGURE 2. New Hope Subdivision Delineation Map and Potential Contaminant Source Locations



PWS# 2180023
WELL #5 & #6

The delineated source water assessment area of the New Hope Subdivision wells contain some springs south of the wells and a road within 500 feet of Well #5 (identified by the 1995 Ground Water Under Direct Influence (GWUDI) field survey). These potential sources could contribute leachable contaminants to the aquifer in the event of an accidental spill, release, or flood. Table 1 below lists the potential contaminants for the wells.

Table 1. New Hope Subdivision, Wells, Potential Contaminant Inventory and Land Use

Site	Description of Source	TOT ¹ Zone	Source of Information	Potential Contaminants ²
	Springs	0-3 YR	GWUDI Survey	IOC, Microbials
	Road	0-3 YR	GWUDI Survey	IOC, VOC, SOC, Microbials

¹ TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

² IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix A contains the susceptibility analysis worksheets for the system. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone (aquitard) above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity rated low for both wells of the New Hope Subdivision. Area soils are poorly to moderately drained, reducing the scores. The well logs for both Well # 5 and Well #6 indicate that the vadose zones consists of mostly clay. Several clay layers above the producing zones of both New Hope wells form an aquitard, reducing the downward migration of contaminants to the aquifer. However, first ground water for Well #5 is found between 55 and 75 feet bgs and first ground water for Well #6 is found between 123 and 167.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced. A sanitary survey was conducted in 2000 for the system.

Well #5 was drilled in 1992 to a depth of 153 feet bgs. It has a 0.250-inch thick, eight-inch diameter casing set to 99 feet bgs into slightly hard shale followed by a 0.250-inch thick, six-inch diameter casing set to 153 feet into medium to soft granite. The annular seal is set to 35 feet bgs into broken basalt and clay. The casing is perforated from 112 to 126 feet bgs and the static water level is found at 50 feet bgs.

Well #6 was drilled in 2002 to a depth of 225 feet bgs. It has a 0.232-inch thick, eight-inch diameter casing that extends from two feet above ground level to a depth of 123 feet bgs into sand followed by a 0.250-inch thick, six-inch diameter casing set to 128 feet bgs into sand. The annular seal extends down to 125 feet bgs into sand. The casing is screened from 125 feet bgs to 160 feet bgs and the static water level is found at 125 feet bgs.

Well #5 of the New Hope Subdivision has a moderate susceptibility and Well #6 has a high susceptibility for system construction. The 2001 sanitary survey includes only Well #5. It indicates that the wellhead and surface seals for Well #5 are maintained to standards and that the well is properly protected from surface flooding. Since Well #6 is newly constructed, a sanitary survey has not yet been conducted on this well. Therefore, there is no information concerning the wellhead and surface seals or whether the well casing has a vent. However, the well log indicates that Well #6 is properly protected from surface flooding. The well log for Well #6 also specifies that the annular seal and casing both extend to a high permeable layer of sand. According to the well log for Well #5, the casing and annular seal extend to a low permeable layer of clay, reducing the potential for contamination of the well. The highest production levels for both wells are located at the static water level, not at least 100 feet below it.

Though the wells may have been in compliance with standards when they were completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. A six-inch diameter well requires a casing thickness of 0.280-inches and an eight-inch diameter well requires a casing thickness of 0.322-inches. In this case, both New Hope wells did not meet the IDWR requirements for well construction.

Potential Contaminant Source and Land Use

The wells rated low for IOC's (i.e. nitrates, arsenic), VOC's (i.e. petroleum products, chlorinated solvents), SOC's (i.e. pesticides), and microbial contaminants (i.e. bacteria). The limited number of potential contaminants and the residential land use in the 3-year TOT zone contributed to the low potential contaminant source/land use scores.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. In this case, total coliform bacteria was detected repeatedly in September 1994 at Well #5, resulting in an automatic high susceptibility score for microbials. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. Well #5 has moderate susceptibility to IOC's, VOC's, and SOC's, and has high susceptibility to microbial contaminants. Well #6 has high susceptibility to IOC's and microbial contaminants and moderate susceptibility to VOC's and SOC's.

Table 2. Summary of New Hope Subdivision Susceptibility Evaluation

Well	Susceptibility Scores ¹									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #5	L	L	L	L	L	M	M	L	L	H*
Well #6	L	L	L	L	L	H	M	M	M	M

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

* = Automatic high susceptibility due to a repeated detection of microbial contaminants at the wellhead

Susceptibility Summary

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Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the New Hope Subdivision, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. Actions should be taken to keep a 50-foot radius perimeter clear of all potential contaminants from around the wellheads. Any contaminant spills within the delineation should be carefully monitored and dealt with. As much of the designated protection areas are outside the direct jurisdiction of the New Hope Subdivision drinking water system, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. Providing these agencies with a recent sanitary survey that includes Well #6 may reduce the overall susceptibility of the system and will assist the DEQ and local agencies in determining the drinking water protection needs of the New Hope Subdivision. In addition, the wells should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. As there are many houses within the delineation, a strong public education program should be a primary focus of any drinking water protection plan. Public education topics could include proper lawn and garden care practices, hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Clearwater Soil and Water Conservation District, and the Natural Resource Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Lewiston Regional DEQ Office (208) 799-4370

State DEQ Office (208) 373-0502

Website: <http://www.deq.state.id.us>

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper, mlharper@idahoruralwater.com, Idaho Rural Water Association, at 208-343-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25% of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Idaho Division of Environmental Quality, 2001. Sanitary survey for New Hope Subdivision.

Kaal, A.S.; 1978. Analysis of Hydrogeologic Factors for the Location of Water Wells in the Granitic Environment of Moscow Mountain, Latah County, Idaho. University of Idaho M.S. Thesis.

Kraemer, S.R., Haitjema, H.M., and Kelson, V.A.; 2000. Working with WhAEM2000 Source Water Assessment For a Glacial Outwash Wellfield, Vincennes, Indiana; EPA Document EPA/600/R-00/022; 50p.

Rember, W.C., and Bennett, E.H.; 1979. Geologic Map of the Pullman Quadrangle, Idaho, Idaho Bureau of Mines and Geology, Moscow, ID.

Williams, B.C., Nimmer, R.E., and Owen, A.; 2001. Clearwater Plateau Source Water Assessment Report, IDEQ.

Wyatt-Jaykim Engineers; 1994; Lewiston Basin deep aquifer study, prepared for Lewiston Orchards Irrigation District (LOID).

Appendix A

New Hope Subdivision Susceptibility Analysis Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

1. System Construction

SCORE

Drill Date	7/24/92	
Driller Log Available	YES	2001
Sanitary Survey (if yes, indicate date of last survey)	YES	0
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	YES	0
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0

Total System Construction Score

2

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	NO	0
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	YES	0

Total Hydrologic Score

1

3. Potential Contaminant / Land Use - ZONE 1A

IOC Score	VOC Score	SOC Score	Microbial Score
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Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0

Potential Contaminant / Land Use - ZONE 1B

Contaminant sources present (Number of Sources)	YES	2	1	1	2
(Score = # Sources X 2) 8 Points Maximum		4	2	2	4
Sources of Class II or III leacheable contaminants or	YES	2	1	1	
4 Points Maximum		2	1	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		6	3	3	4

Potential Contaminant / Land Use - ZONE II

Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	YES	1	0	0	
Land Use Zone II	Greater Than 50% Non-Irrigated Agricultural	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		2	1	1	0

Potential Contaminant / Land Use - ZONE III

Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	YES	1	0	0	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		2	1	1	0

Cumulative Potential Contaminant / Land Use Score

10	5	5	4
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4. Final Susceptibility Source Score

6	5	5	6
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5. Final Well Ranking

Moderate	Low	Low	High
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1. System Construction

SCORE

Drill Date	2/4/02	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	NO	0
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0

Total System Construction Score 5

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	NO	0
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	YES	0

Total Hydrologic Score 1

3. Potential Contaminant / Land Use - ZONE 1A

IOC Score	VOC Score	SOC Score	Microbial Score
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Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0

Potential Contaminant / Land Use - ZONE 1B

Contaminant sources present (Number of Sources)	YES	2	1	1	2
(Score = # Sources X 2) 8 Points Maximum		4	2	2	4
Sources of Class II or III leacheable contaminants or	YES	2	1	1	
4 Points Maximum		2	1	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0

Total Potential Contaminant Source / Land Use Score - Zone 1B 6 3 3 4

Potential Contaminant / Land Use - ZONE II

Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	YES	1	0	0	
Land Use Zone II	Greater Than 50% Non-Irrigated Agricultural	1	1	1	

Potential Contaminant Source / Land Use Score - Zone II 2 1 1 0

Potential Contaminant / Land Use - ZONE III

Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	YES	1	0	0	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	

Total Potential Contaminant Source / Land Use Score - Zone III 2 1 1 0

Cumulative Potential Contaminant / Land Use Score 10 5 5 4

4. Final Susceptibility Source Score

8 7 7 8

5. Final Well Ranking

Moderate Moderate Moderate Moderate